THE SCOPE

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THE SCOPE

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Boston, Massachusetts

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THE SCOPE

Presents

THE NATURE OF LIGHT

by Paul S. Cline, O. D.
Mass. School of Optometry
Boston, Massachusetts

The contributions of Sir Isaac Newton to the science of optics include the demonstration of the heterogeneity of solar light and his support of the corpuscular theory of light. This hypothesis maintained that light consisted of high speed material particles given off by a light source, which when entering the eye excite a lummous sensation. Reflection and refraction were accounted for on the assumption that the corpuscles were either in a fit of easy reflection or transmission. Thus whether one or the other occurred depended upon the disposition of the particle. That light travels in straight lines (rectilinear propagation), dispersion and such diffraction effects as were observed were explicable on a corpuscular theory. It is of interest to note that the bending of light toward the normal when refraction occurred when light passed from a rarer to a denser medium was explained by increased velocity of the light in the denser medium owing to an increased vertical component of the corpuscular velocity, which necessitated an increased resultant velocity. The absence of large scale diffraction effects (light bending around obstacles) was the chief reason this hypothetical substance was assumed to for Newton's rejection of the wave theory, which was supported by a famous contemporary, Christian Huygens.

The wave or undulatory theory as originally expounded held that light consists of longitudinal waves such as sound. To explain the propagation of light, Huygens assumed that every point of a given wavefront acted as a secondary source to produce secondary wavelets which proceeded in all directions. The back waves were annulled by the motion of the medium, and thereby producing results in other directions. The locus of these secondary wavelets was the new wave front which again produced other wavelets and the proagation of light was explained by this so-calle d Huygen's principle. Reflection and refraction were easily explained employing this principle. The wave theory was modified when Fresnel in attempting to explain polarization, by which term is meant the restriction of light vibrations to certain planes, was forced to assume that the waves are transverse in nature, similar to the bidimensional water waves, in which the displacement of the medium it at right angles to the direction of the disturbance. Two discoveries about this time repudiated the corpuscular theory. One was the true interference effects discovered by Thomas Young earlier in this nineteenth century, by which is understood that darkness due to proper superposition of light waves, which mutually cancels each other, so that darkness results. This phenomenon is untenable on a corpuscular basis such as Newton supported, since it was inconceivable that material particles could annihilate each other. The other discovery was that of Foucault who experimentally showed

the velocity of light in carbon disulphide is less than that in free space, which is contrary to the Newtonian assumption.

But the wave theory had its difficulties, even though the classic phonomena were explicable on an undulatory basis. Wave motion requires a medium for its propagation, and it can be shown that the velocity of a transverse wave depends on the rigidity (shear elasticity) and the density of the medium. To propagate light with its velocity of 186,000 miles per second or 300,000,000 meters per second, the medium must have an extremely great rigidity (greater than that of steel) and a density far less than any terrestrial substance. This peculiar medium was termed the luminferous (light-bearing) ether. In order to account for the transmission of light from the stars and through transparent media, this hypothetical substance was assumed to pervade all space, interstellar as well as intermolecular. It was difficult to explain the apparently unhampered motion of the planets moving with a high velocity through the rigid ether. In addition, all attempts to detect this ether failed so it was assumed the ether possessed attributes that ordinary mass did not possess. This among other things did much to discredit the elastic solid hypothesis.

In the sixties of last century, Clerk Maxwell through a series of brilliant analyses postulated the identity of electrical and light waves which were assumed to differ only in frequency. Thus light waves were propagated as electromagnetic disturbances in a new ether which did not require the unusual properties ascribed to the jelly-like elastic solid of the undulatory theory. The ether here was identified with fields of force; electrical fields as they vary set up magnetic fields which, in turn, as they vary induce electrical fields, the propagation being carried out in this manner. The fields of force are conveniently expressed by mathematical symbols of one nature or another.

It is of interest to note that the ratio of the electromagnetic unit of current is 300 trillion times the electrostatic unit, this ratio being equal to the velocity of light in centimeters per second.

Some years later Hertz and Faraday verified experimentally the analytical predictions of Maxwell and showed that electrical waves can be refracted, reflected and polarized like light waves. Further research led to the linking together of those transverse displacements traveling with the velocity of light in vacuum, the entire group representing what is known as the electromagnetic spectrum. This spectrum includes the electrical waves some thousands of miles in length and the gamma waves some billionths of a millimeter in length. The frequency of the visible spectrum varies from about 800 trillion per second (violet) to 400 trillion per second (red). To generate these high frequencies Lorentz assumed that atoms consist in part of electrons capable of vibrating when displaced under the influence of a restoring force, but otherwise when not excited are in equilibrium. This theory accounted for some of the phenomena associated with magnetism and electricity.

In 1887 Hertz noted that a spark discharge between two electrodes occurred more readily when illuminated by ultraviolet light. In seeking the explanation for this photo-electric effect, the quantum theory was devised, since the classic theory did not provide sufficient energy to expel the electrons from the illuminated metal and thus make the surrounding medium electrically conducted to a greater degree. In addition a radical assumption was made, namely that not only was the energy distributed in lumps or quanta over the wave front, but that the absorption took place only by quanta.

According to the classic theory, an electron radiates if the direction or velocity of rotation is altered. Thus if an electron rotates about the proton (nucleus), the

direction of motion is continually changing with radiation of varying frequencies being emitted. Radiation lessens the energy of the electron, with the result that the electronic orbit and velocity will vary with time. A group of similar atoms composing a gas will have all sorts of electronic frequencies which should produce wave lengths that should form a continuous spectrum.

The failure of the classic theory to account for the sharp spectral lines led Niels Bohr to assume that an electron in continuous motion does not radiate contrary to the known laws of electrodynamics. In addition radiation occurred if the electron jumped from an outer orbit of greater energy to an inner orbit of less energy, the difference in energy levels of the two orbits representing the energy of the radiation. Similarly absorption took place when the electron received sufficient energy to enable it to jump to an outer orbit. If the absorbed energy is great enough, the electron leaves the atom and thus the photo electric effect is produced. It was determined the permissable radiation and absorption took place in quantum units. The energy of radiation is concerned with Planck's constant and the frequency of the radiation.

E equals h v

Where E is energy in ergs, h is Planck's constant whose value is 6.55×10^{-27} ergseconds, and v is the frequency.

In a consideration of the problem Einstein asserted that mass and energy represent different aspects of the same entity. Whenever this is a radiation of energy, there is a corresponding mass defect. Einstein's law states that the energy is proportional to the mass of a body, the constant being equivalent to the square of the velocity of light in centimeters per second when the energy is in ergs and the mass in grams.

E equals $m c^2$

Where c is velocity of light in vacuum. Thus one gram of sunlight when converted to energy represents 9×10^{20} ergs or billions of horsepower. A great source of power may in the future be available if the subatomic energy can be utilized.

Further investigation in an endeavor to explain magnetic and electro-optical phenomena as well as to account for the spectra of complex substances led to the wave theory of matter in which it is assumed that electrons are identified with waves rather than as a corpuscular entity. The study of these electron waves is termed wave mechanics. Failure to ascribe definite periodicities to the electron in the revised Bohr model of the atom which might agree with the frequency of the radiation, led to the assumption that phenomena can be better understood by holding to a theory of this sort. The theory of probabilities plays an important role in determining the most probable position of the electron in its wave system, since it was shown that there is a minimum of uncertainty which is encountered whenever the velocity and the position of an electron is to be determined. The more exact the determination of the velocity, the less accurate the determination of its position. This uncertainty is set forth in the "Uncertainty Principle of Heisenberg" also known as the Principle of Indeterminacy. Associated with the development of the science of wave mechanics is de Broglie , whose name the electron waves bear, Schrodinger, Pauli and Dirac. The latter is identified with the Fermi-Dirac statistics which seek to determine the behavior of groups of electrons on a probability basis.

The modern conception of light includes not only a density and energy flow, but also momentum and a system of stresses, which are associated with the relativity theory. The gravitational attraction which all masses, or their energy equivalents possess has been shown to exist for light. During a total solar eclipse, light rays passing by the edge of the sun from the stars undergo a gravitational deflection owing to the gravitational pull of the sun's mass.

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WANTED - A COMPASS

by Harris Gruman, B. S., O. D., D. O. S.

PART II.

Through the courtesy of the Editor I have just received a copy of the January issue of "The Scope" in which Dr. Aronsfeld in a second part of his paper replies to the views of Dr. Samuel H. Robinson of Prescott, Arizona and to mine published in the November issue of "The Scope". Dr. Robinson is of course well able to defend himself so that I shall limit myself to the part dealing with my article.

I must admit that I derived much satisfaction in reading Dr. Aronsfeld's paper for by confining himself to the reply of the relatively unimportant portions of my contention, it showed that the eminent Houston optometrist really differs less in his views than may at first have appeared.

For instance I asked the question: "Is there not something paradoxical in the idea that though our young men and women in class A optometry schools spend practically the same length of time in their professional studies as do physicians and surgeons yet they have not the right to refract a pair of eyes by ANY method they deem advisable? They study anatomy, physiology, pathology, but dare not remove a cinder from an everted lid, a service that any barber will render for the asking."

Dr. Aronsfeld does not answer, but I can imagine his feelings in the matter, for in the February 1st issue of the Optical Journal and Review there is now appearing an excellent series from his pen entitled "The Practice of Optometry". In this issue he details the history of a patient whom he labels case No. 3924G. The man aged 52 was referred to him by another optometrist and Dr. Aronsfeld proceeded to give him a most painstaking and searching examination and refraction of his eyes. Reading it one can appreciate how carefully he works and see why he has created so enviable a reputation for himself. But mark the following:

"The ophthalmoscope", says Dr. Aronsfeld, "showed no definite abnormality, but the lamina cribosa in each disc was deep and well marked and triangular in form. IT DID NOT EXTEND TO THE MARGIN OF THE DISC."

Yet Dr. Aronsfeld, careful practitioner that he is, was not taking any chances with the eyes of his patient. So what does he do? We quote further.

"As a matter of safety both for the patient and myself he was referred to an ophthalmologist in order to have his tension taken. An appointment was made and he called the next morning at the office of the ophthalmologist. The medical man called me on the telephone and stated that he had taken the tension with both tonometers in his office (they are of different makes) and that it was entirely normal."

Why did not Dr. Aronsfeld take the tension himself? Because to do so, it is necessary to anesthetize the cornea so that the plate or stirrup of the instrument may be rested thereon and the amount of tension read off the instrument. The technique is simplicity itself but the bug is in the fact that the cornea must be anesthetized. So the poor patient had to be referred to a third practitioner with the added expense thereto for this service. Yet Dr. Aronsfeld would have us believe that he is opposed to giving trained optometrists the right of instilling a few drops of cocaine into an eye for the safety of his patient. Fortunately No. 3924G had been referred to Dr. Aronsfeld by another optometrist. Had he been referred by a physician and the latter later learned that Dr. Aronsfeld had proven himself incapable of rendering a COMPLETE eye service, the physician would have known

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A REPLY TO DR. ARONSFELD

by Samuel H. Robinson, O. D., F. A. A. O.
Prescott, Arizona

Defending his original article, — *Wanted A Compass*,— Dr. Aronsfeld, in the January issue of "The Scope", quotes from my reply to him, yet says nothing to refute my statement which I now repeat:

> "Optometry has been pilloried by optical racketeers for so long a time that the public looks upon it irrevocably as a shady, quasi-professional practice. What have our "defenders", — of an optometry-not-to-be-disturbed, — done about this, to date?"

Dr. Aronsfeld had the opportunity to answer this indictment but failed to do so. Instead, he resorted to poetry, a few platitudes, and the usual veiled intimidations, designed to arouse fear for the future of optometry.

If heroic measures intended to lift optometry out of the mire in which it wallows seem a bit risky to Dr. Aronsfeld, may we remind him that only initiative and self-sacrifice can win for optometry the redemption which is so much needed. Because men like Dr. Aronsfeld feel that they have attained their full and just measure of professional respect and success, and prefer to rest on their oars, is no reason that we should fail the ever-increasing number of college-bred men, whose professional ideals must of need have changed, when it is considered that both their modern training and its cost are wholly unlike that of the average spectacle man, of the period when the writer and Dr. Aronsfeld first began their careers.

Dr. Aronsfeld shows undue solicitation for the rights and welfare of legallized medicine. Omitting the usual sallies of "aping medicine", and "seeking to enter medicine by the back-door", he now stresses the "unfairness" of optometry in seeking to invade the field of medicine. In his reply to Dr. Gruman, he writes:— "I insist that we must show the same consideration to other professions that we expect them, in turn, to show to us."

Dr. Aronsfeld did not overlook the implied fact however, that for the last fifteen to thirty years, medicine had been consistently invading the field of optometry. Those who are ever ready to impress upon us the unmoral and illegal aspect of optometry, attempting to embrace that simpler medical therapy which is so intimately associated with refractive work, will find no consistent answer for their attitude, when they realize more clearly, that organized

(*please turn to page fourteen*)

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TRUE INTROSPECTIVE

Today it seems that the eyes of the world are focused upon us. We have invited it, therefore we must not discourage it. In our efforts at self-improvement we have been free to comment on our own faults, and we must not deny this privilege to others. No one outside the profession can possibly be so severe with us as we are with ourselves. We have nothing to fear because of the eyes that are turned upon us. We should encourage those who speak in criticism. We look at them — they have a right to inspect us. Let us sit down at a table with our critics and discuss the flaws they have found. Some of the flaws are not at all blemishes but only appear so on snap judgment based on insufficient facts. Many of the flaws we also have found and are taking steps to remedy.

We must try to see ourselves as others see us, and not until we attain this *true* introspective will we really be able to advance to the highest level of professionalism and public respect.

ANNUAL CONVENTION

Never before has there been such widespread interest in the Annual Congress of the New England Council of Optometrists. The dates are March 27-28-29-30 at Hotel Statler, Boston. An imposing array of educators, optometrists and research workers have been booked to appear on the lecture platform. The Annual Exercises of the Distinguished Service Foundation in Optometry will be held Monday evening March 28th. A Reading Clinic will be held on Wednesday March 30th, featuring three outstanding authorities on the subject: Dr. Emmett A. Betts, Dr. Donald D. Durrell and Dr. Robert J. Beitel, Jr.

A partial list of lecturers includes the following: M. J. Julian, President, The Better Vision Institute; Dr. Leslie Scown, Dr. William J. Tait, Dr. Paul Cline, Dr. Frederick Brucker, Mr. Elmer Robinson.

The registration fee for students is $2.00 and a cordial invitation to all the students of the Massachusetts School of Optometry is extended by the President of the New England Council of Optometrists, Dr. John J. O'Neil.

EYE, EYE, SUH!

by Maury Ossen '38

EYE-O-AGAIN —

This introductory paragraph is purely personal — so you have our permission to skip it entirely: The oversigned is preparing an article entitled, "Manufacture of Glass" to regain some prestige for the "Scope" which one of its members lost via the last set of exams. (anneal down and beg yo' fo'giveness.)

Reprinted from the Fall 1933 Scope: "Does Dr. Green ever intend to give us a break and slow down when dictating?" (No!)

Optometry in review: From 1901 to 1921 the number of optometrists increased tremendously reaching a high of approximately 21,000. But since then the profession has gradually diminished to the tune of 300 a year leaving about 16,000 practitioners. Remember this—many men are registered in more than one state, some in three or four, so that we can come to the conclusion that optometry numbers nearer the 10,000 figure rather than the government figure of 22,000. Here's something that should make you think twice — Optometry is a "middle-aged" profession. Within the next ten or fifteen years we're going to lose quite a few men — some say on the average of 1000 a year. Yet the optometric schools average about 250 graduates a year. Will optometry be able to cope with this crisis? Unless there is a rapid change in our existing conditions the answer is NO.

(*Note*: The great increase from 1901-1921 was due to the fact that every time a state optometry law was passed hundreds of exempts were added to the list of registered optometrists.)

This month's wisdomism: The Parrot, turning his head this way and that, as if one eye had seen what the other had reason to doubt.

Factnapped from "The Pupil": Rhazes, an Arabian, born in 850 A. D., discovered the reaction of the pupil to light. Rhazes' passage runs: "In the middle of the icy humor (Iris) appears a hole which now dilates and now contracts, according as the icy humor feels the need of light; it contracts when the light is strong, and dilates in obscurity."

The airlines found that when the airplanes were interiorly decorated with brown and yellow the passengers were likely to get nauseated so they substituted green which eliminated air sickness to some extent. They are even contemplating on avoiding coffee and mayonnaise because of their sickening color effects. In the new airliners even sheets and blankets are dominantly green. (If they figure on serving only spinach — we're going to stick to trains.)

The first picture in which spectacles are shown on a person is one of Cardinal Ugone painted in 1360 by de Modena. It now hangs in the church of San Nicola in Treviso. (Darn if we know where it is, either.)

From the autobiography of the celebrated Italian tragic actress, Adelaide Ristori: "So thoroughly had I entered into the nature of Lady Macbeth (her favorite role) that during the entire scene my pupils were motionless in their orbits, causing me to shed tears. To this enforced immobility of the eye I owe the weakening of my eyesight." (At the most, just an "arm-chair" theory.)

The sun's light expressed in terms of candlepower would be 1,575,000,000,000,000,000,000,000,000,000,000. The sun is about 500,000 times as bright as the moon.

While you're trying to figure out how much all those digits total, we'll just amble along. But bear this in mind — *Eye'll be seeing you again.*

SENIOR SLANTS

by Fernand Fortin '38

All's quiet on the odd side of Boylston Street tonight so I guess it's a good time to start this here column before some of the "non-flinchers" from down stairs come up here and ruin my writing arm — See Massucco — he's president.

If A. Harris ever took up knitting for a hobby I'll bet he could make the prettiest afghan — which reminds me — when Budilov was a freshman he worked part time in a restaurant, "Ye Ole Dichromatope", I think it was, and one day a customer came in for a bowl of tomato soup — and Mark came back with a bowl of gravy. Now I can understand why you call a "dieresis" a "dead colon".

Just because your pictures didn't do you justice — Donahue, that doesn't mean you had to leave them out in the sun all day for an excuse to go back for another sitting.

May I take this opportunity in informing Shannon that the "Talmud", according to Webster's Collegiate Dictionary, is "The body of Jewish civil and canonical law, consisting of the combined Mishna, or text, and Gemara" — so how then could you read up on astigmatism in that book. Maybe you and Bob Roffman should get together — he has a Saint Peter.

The way to a man's heart may be through his stomach but according to Alie, the way to a woman's heart is through her brother — just keep on trying, that's all.

Sorry to have to inform you, Hanson — but that girl at the Gobbler "goes steady". Prognosis, ????? — better use the "sour grape" philosophy and be satisfied.

Gibbon's home town must be quite a place, for from the New Yorker comes this statement: "The Mass. motorist who lost his way at night, and after a half-hour's driving on a dirt road was told by a man in a parked car that he was on the Taunton race-track."

Seems as though there's no other alternative than to inform the bureau of standards that A. Harris's ruler doesn't measure 2.54 m/m to an inch — They've undoubtedly made some grave mistake in calculations.

Professionalism certainly reaches its peak at M. S. O. when a blizzard hits Boston (one snowstorm a year and they call it a blizzard) — what with MacNeil's red hat and Holts' knee-high pants.

When Hanson is taking dist. P. D. measurements on a patient and he says, "Now look at my open eye", how in the world will they be able to detect which eye is open?

Why do the Clinicians have to wait until the last period of a semester to hand back our daily clinic reports — is it to give "Doc" Green a chance to spend twenty minutes of a "review period" to hand them out one by one?

Burns was to officially discard his vests on "ground hog day", but when reports came back that he saw his shadow (the ground hog) he's now back to three vests again (no, not the ground hog, Burns).

How would you diag"nose" this case? A marked constriction of Cerruti's inferior nasal fields.— Send your diagnoses in care of this column,—and don't write that its probably a marriage scotoma.

Tell us, Swartz, how you'd go about drawing "one" parallel line — maybe its your "impractical mind" at work again, so you'd better go see Doc Namias first.

"Laziness Personified" — Holt, Pyne and Strout matching pennies — "odd man" gets up to turn on the light, when all Pyne has to do is stretch a little — Holt lost.

FROSH FACTS

by Herbert S. Greenblatt '41

At the beginning of the second semester like a bolt from the blue comes the announcement that Theoretic Optics is to be substituted for physics henceforth. Oh well, an "F" is an "F" no matter what it comes after.

Since Hymoff became an uncle Dr. Svenden has been beseiged by requests for all kinds of information concerning the care and feeding of infants. We can just picture Uncie George bending over a tub washing diapers. Gosh!

We wonder if Dr. Russel finally found out what *really* caused the earthquaqke one quiet afternoon. Certain members of the back row should have troublesome consciences.

Regardless of what anyone says, the smallest unit of time is that required to scan the marks on our report cards. The eye can single out that "F" before one can say "Brucker, Namias and Russel."

One of the many things that puzzles most of the freshmen hereabouts is the question of where Dr. Brucker gets his seemingly inexhaustible supply of neckwear. Red, orange, yellow, green, blue, and violet ties pass before our eyes with nary a repetition.

William Joseph insists that Mr. "Bery" owns the elevated railway. His name is on every car.

Definition: Physics is something everyone takes but no one passes. (or am I thinkonly of myself again?)

The freshman faculty ought to get together and decide what's to be done about the windows in Frosh A. Lew Beckwith suggests that there ought to be a generator attached to them. He says enough energy could be generated from the frequent ups and downs to supply M. S. C.'s electrical power.

Sklar says that the response from the adv't in the last issue of "The Scope" was so tremendous that he was able to buy a brand new razor much to the relief of a certain Dr. Russel.

Dr. Natali got so excited during the showing of the biology slides that he fell right out of his chair.

What student in which class is absent so much that what prof has forgotten what he (the student) looks like?

By this time next month we'll already be worrying about exams again so until then, weep, weep, lost souls and bemoan your fate.

SORORITY NEWS

By A. Veronica Meagher '38

'Tis said — "No news is good news." Far be it from us to question the perspicacity of the age-old sages. But if it is suggested that the perverse of this adage is true, we must conclude that there is an exception to every rule. However, before proceeding to establish exceptions, we must confirm our position.—Have we news, or have we not? In the strictest sense of the word it can hardly be the affirmative — as most of our news is anticipated before we have an opportunity to expose it via the script. — Here goes — In case you haven't heard, you must have seen — that one of our fold has returned to the flock. Welcome back, Madelyn, and may your harvest be full to overflowing. We know that these are not only our wishes but those of all your old friends and the new. — Can you tell us, what it is? Madelyn was not here but a short day or two when she was presented with a heart — a very breakable one, indeed — crown, index 1.523 — fashioned by a sentimental young swain with a flair for artistry in his beveling. He risked the

(*please turn to page fifteen*)

ALUMNI NEWS

by Malcolm Harris '38

The M. S. O. Alumni Association met February 7, to discuss plans for a reunion, and to decide whether or not to support Senate Bill Number 183, which would more or less eliminate corporate practice and give Optometry to the Optometrist.

The guest speaker of the evening was Dr. Covitz, ophthalmologist from the Beth Israel and the Boston City Hospitals. The subject of his lecture was 'The Clinical Manifestations of the Diseases of the Cornea.'

Dr. Cowin, president of the Alumni Association, presided over the business meeting. He presented to the floor plans for a luncheon-reunion to be held during the New England Council of Optometrists' Convention. A motion was made and seconded to have the reunion at that time but this was not carried due to the fact that there seemed to be no time during the convention when a satisfactory reunion could be held. While the question of a reunion seemed to be deadlocked, our efficacious Dr. Cline made the motion "that a reunion-banquet be held at the discretion of the body." This motion was carried and plans are now under way for such a reunion. A definite announcement in regard to this affair will be given at the next meeting which will take place some time the first week in March.

I would have liked to have seen the first motion carried and a precedent set which in future years would lead to an annual affair. This should be a huge success due to the number of alumni who practice in New England.

A little more difficulty was encountered in regards to Senate Bill number 183 due to the fact that no one knew much what it was about. It was however decided that the bill was for the betterment of Optometry and that anything along this line should and would be supported by the association. It was decided to send a representative to the hearing of the bill and to state that the M S. O. Alumni Association was for it.

The business meeting concluded, the students were permitted to join the Alumni and had the privilege of listening to Dr. Covitz. He is a virtual dynamo of a man, who in the short time of about an hour presented all the types of Keratitis with their causes, clinical manifestations, prognoses and treatment.

In the beginning Dr. Covitz explained it was not going to be a textbook lecture, with all the biochemistry, etc. attached, but was to be confined to clinical signs and handling. He did just that, giving us definite signs and symptoms which lead to a positive diagnosis, and also definite treatments in each case.

PERSONALS

Our congratulations to the recent graduates of M. S. O. whose good fortune it was to pass the recent State Board examinations and thus enter into the honored circle of full-fledged optometrists. They are:

Dr. John DiNapoli '37
Dr. Alden Tuells '37
Dr. Jacob Shack '37
Dr. Abraham Cohen '37
Dr. George Weinberg '36
Dr. Hyman Baker '36

Dr. Foster Namias will become a proud daddy some time in June ("according to the calculations on the slide-rule"). Lots of luck, Doc!

Dr. Alfred Roy '37, has recently left the clinical staff of M. S. O. to open up in Worcester, Mass. (Competition for Dr. Hal Shepard '37). We all wish you the best of luck, Al, and you certainly will be missed!

JUNIOR JOTS

by Arthur F. March, Jr. '39

W. Reynolds has solved the intricate problem of just how to question the patient in phoria testing. Instead of asking "Now where is the upper image in regard to the lower" or "Is the right image above or below the left," which after all gets to be very confusing, he merely adjusts the prisms and says, "How's things?"

And speaking of phorias, we understand from his own lips that Johnny Ochab is suffering from those "Base in Blues."

This has got nothing to do with Optometry but maybe it will relax your brains to puzzle over it. If, at the end of a futile hour, you're still convinced that it's as crazy as it looks, see Cal Wood for the answer. Or maybe we're underestimating your intelligence. Anyway here it is:

If the great B M T
Put:
If the great B.
Putting:

Dr. Greene: After you get 180 what do you do next?

Voice from the rear: Sell!

Contribution by Irving Wecker: Dr. Cline continues to taunt us with "You can READILY see that——" Oh yeah.

And while we're on the subject of Dr. Cline, it seems that he inadvertently got the bird the other day. Some misinformed robin, no doubt fooled by the balmy atmosphere of Junior B room, sat on the window sill and accompanied the doctor's lecture on the Newtonian formula with a solo.

It seems that that great team of inventors, Wood and Wright, are progressing beyond the paper stage. They have been reported sneaking around the clinic with a tape measure recently. Looks like business.

Proof that Optometry is filling a definite need: A local electrical manufacturing company employing several hundred men is installing a completely equipped refractionist's office, to be handled by an optometrist, in addition to dental and medical offices for the benefit of their employees.

We're thinking seriously of starting a new department in this column, that is, with the help of the student body. The department is to be entitled, "*Bright Sayings of our Professors*", and it is with the hope of passing on to posterity the lighter jewels which drop from the lips of our preceptors, that this department is being instituted. If you hear a *Bright Saying* from a precocious instructor, jot it down along with his name and age and drop it in the Scope Box with the name of the department on it. (Note: *Instructors shall not be allowed to submit their own sayings.*)

--LIGHT

(*continued from page five*)

The quantization not only of energy but also of permissible velocities and electronic spins, and even angular magnitudes associated with rotation has been effected, somewhat resembling the all or none law in physiology. While the relativity theory is mainly concerned with gross masses and the quantum theory with sub-atomic particles, yet both are intimately related, and it is highly probable that a unification of these theories will result in one which will satisfactorily interpret the phenomena of the future.

It is highly conceivable that the natural constants that modern physics today accepts as fundamental will someday be shown to be inter-related and it would not be surprising to find the velocity of light to hold its position as one of the most fundamental of these constants.

THE END

SPORT EYELIGHTS

by Maynard Rosen '38

The M. S. O. basketball team again showed it superiority by recently scoring two more victories. On January 20 they defeated the Massachusetts College of Osteopathy and on February 10 they trampled over the Junior varsity team of the Salem Teachers' College.

Following are the summaries:

M. S. O.	G.	F.	P.
Weisman, r. f.	6	1	13
Levandoski, l. f.	1	0	2
Green, c.	8	0	16
Ahern, r. g. 0	0	0	0
Wolfson, l. g.	4	3	11
Totals —	19	4	42

Substitutes: Fradkin, Czelusniak, and Fox.

M. C. O.	G.	F.	P.
Bender, r. f.	5	1	11
Broderick, l. f.	4	1	9
Rubin, c.	1	1	3
Komas, r. g.	3	1	7
Newth, l. g.	1	1	3
Pawlowicz, c.	1	0	2
Totals —	15	5	35

Substitutes: Hapgood, Parker, and Powers.

M. S. O.	G.	F.	P.
Weisman, r. f.	6	2	14
Levandoski, l. f.	2	0	4
Green, c.	5	0	10
Braver, r. g.	2	0	4
Wolfson, l. g.	3	0	6
Fradkin, r. g.	1	1	3
Totals —	19	3	41

Substitutes: Fox and Snyder.

S. T. C.	G.	F.	P.
Attridge, r. f.	2	2	6
Const'tinitus, l. f.	4	0	8
Mazonson, c.	0	0	0
Parks, r. g.	1	1	3
Freeman, l. g.	2	1	5
Smith, r. g.	1	1	3
Totals —	10	5	25

As for comments on the games, there is nothing more that I can say which the "box score" hasn't already told you — that is, *you* should be proud of the hard fighting quintet representing *you* on the basketball court.

For the first time that I can remember the team is receiving the wholehearted support of the student body and it is to this fact, I think, that our quintet owes its phenomenal success. We are pleased to see the freshmen interested in the only sport of the school and hope that this feeling does not waver in future years. Incidentally speaking of freshmen we wish to say "Gil Hindman' — who told us to mention his name *or else*. We wonder why "Mell" Fine was so excited with the S. T. C. defeat — will someone enlighten us?

Until the next SCOPE is issued, I remain

Yours in Sport.

-- A REPLY

(*continued from page seven*)

medicine, because it "had us on the hip" when we sought to pass optometry laws, technically impressed into our ranks, as exempts, five times as many medical men as constituted our own complete roster, and of these, ninety per cent had never fitted a pair of glasses in their entire life, nor could even define intelligently the difference between a plus and a minus lens. That number of potential optometrists in medical ranks, or medical men in optometric ranks, has, of course, multiplied infinitely during the intervening years.

I respect the honest convictions of all men. When, however, men of the apparent mental breadth of Dr. Aronsfeld, refuse to see the actual situation which confronts optometry in this fast-moving age, and insist on adhering to the yardstick and mental viewpoint of a generation ago, I sometime begin to feel discouraged about the future of our profession. This is especially true when the character of our internal problem is so vicious and glaringly repugnant.

In conclusion I would say to Dr. Aronsfeld that if our program is untenable or impossible, let him dispel the mystery and relieve our suspense by presenting his more workable and more logical plan. However, we have had enough of mere verbiage and obstruction. What we want is definite action, — a living, moving, growing plan.

Dr. Aronsfeld quotes the truism, — "thrice armed is he who hath his quarrel just". I am glad that he subscribes to this. It is this moral staff which sustains me in the effort to arouse optometrists to their inherent rights as well as their responsibility.

Unless Dr. Aronsfeld and his followers begin to see the light, free of those subtle human prejudices, they will only obstruct optometric progress. In the end however,— if they live long to see it, — they will but find themselves on the sidelines, watching the big parade.

-- A COMPASS

(*continued from page six*)

better in the future.

Oh, I know the reply. I too have cases referred me by physicians but when they do so it means that they take the chance of having that patient referred a second time to some ophthalmologist anyway should the question of the presence of a pathological condition arise. No wonder many physicians shy away from referring their cases to the optometrist.

Dr. Aronsfeld in his reply makes much of my reference to the expansion of Osteopathy. Perhaps its downfall (if it is falling) is due to its theory of the cause and treatment of disease rather than increased education. I note that he carefully refrains from any reference to the expansion and growth of medicine and dentistry.

In conclusion let me assure Dr. Aronsfeld that no discourtesy was meant by me in referring to him as an old timer and an exempt. The term of course (if he will refer to my original article) was used in its broader, more favorable connotation rather than in any critical sense. My point was and still is that some of our very best and finest optometrists were numbered among the so called "old timers".

I like the admonition from Pope that Dr. Aronsfeld quotes:

"A little learning is a dangerous thing;
Drink deep, or taste not the Pierian spring;
Their shallow draughts intoxicate the brain,
And drinking largely sobers us again."

That is why I am so strongly in favor of a NEW COMPASS that will lead Optometry out of the wilderness or confusion and half baked ideas into the light of a more complete and thorough understanding of the human eye, one that will make of them truly THE eye specialists of the nation.

(*Editor's note*: In our next issue we shall close this prolonged but most important debate by publishing the viewpoints on this vital topic of two undergraduates of M. S. O., Arthur F. March and Calvin A. Wood.)

-- SORORITY

(*continued from page eleven*)

wrath of Mr. MacDonald in shaping this beautiful symbol in preference to beveling a lens — 40 mm round. Ah, romance! And 'tis practically two months 'til springtime! — And before Lent and exams envelope us again, we must have one more of our exclusive socials (these seem to be quite the vogue in and about the school at present — Hope we're not guilty of instigation.) Probably all this excitement will take place at the Thor or thereabouts, as well as the theatrical districts.

No sooner had Madelyn returned when we all packed our tooth brushes and Xmas pajamas and turned our paths toward Marlboro for the week-end where the Cournoyer and Lynch families showed us an example of New England hospitality — lemon-and-lime substituting for the traditional mint julep. (Perhaps this is the explanation for the many absentees among us the first of the week). Nevertheless, this did not prevent us from meeting everyone, that is, someone — even our own Charlie Bowman. Here's looking forward to another visit.

And for our intellectual enjoyment — We have been absorbing some of the lectures on general health sponsored by the faculty of Harvard Medical School — taking place on these dreary Sunday afternoons. But we consider the trek well worth the energy put forth.— You should try it sometime.

For the present, this seemingly well takes care of February, and therefore, the continuation of this prattling is verily a Hobson's choice.

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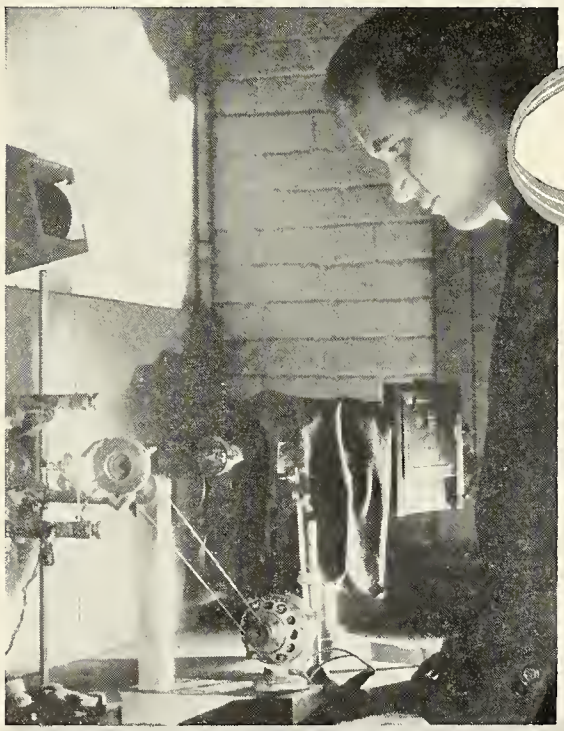

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